BAA 04-05 Bidders Brief

Automated Scene Understanding (ASU)

Technology and Prototypes

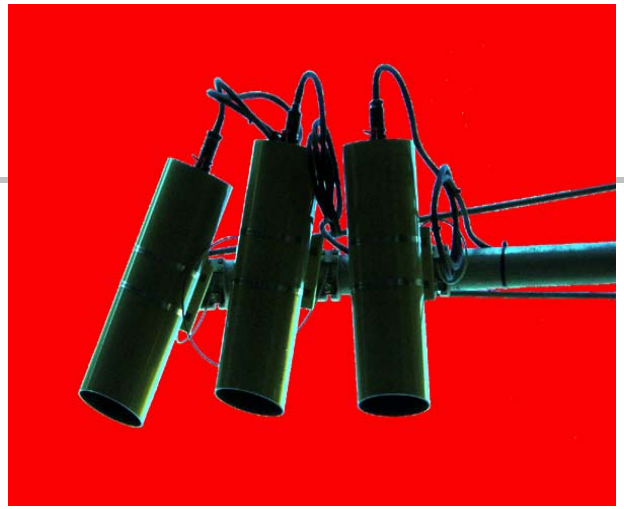
Peter Miller
peter.miller@dhs.gov
202-772-0929

Kirk Evans
kirk.evans@dhs.gov
202-772-9989

Larry Willis
larry.willis@dhs.gov
202-772-9565

April 26, 2004

Homeland Security




Gates 101-112

Overview Outline

- **Program Overview & Background**
- Program Objectives, Desired Outcomes and Approach
- TTA-1&2: Architecture, Component and Algorithm Requirements (Miller)
- TTA-3: Hawkeye Prototype Testbed Description & Requirements (Evans)
- Proposals Process
  - Overview
    - Award Mechanisms & Funding Level
    - Procurement Schedule
    - Submitting Questions
  - Proposal Guidance and Selection Criteria
    - TTA-1&2: Architecture and Components (Miller)
    - TTA-3: Hawkeye (Evans)

Program Overview

Automated Scene Understanding (BAA 04-05) seeks to advance the current state-of-the-art of automating the understanding and interpretation of fused, multi-sensor derived information through the development of innovative open architectures and advanced components and algorithms and to incorporate these new architectures, components and algorithms into Project Hawkeye and other DHS testbeds.

Background – Sensor Use is Rising

- Governmental organizations are increasingly deploying sensors, such as closed circuit television (CCTV), specialized video and infrared cameras, radars, and other sensors to provide physical security and general awareness at critical infrastructure, transportation hubs, borders and border entry points and our ports and harbors.

- Private industry, more acutely aware of the threats to physical security, is installing large numbers of security networks, many based on CCTV systems, at buildings, industrial sites and other key locations.

- Different types of sensors such as CCTV, thermal imaging, beacons, and radars are also appearing at such locations.

Background - Consequences

- The volume of data (in terms of video screens, alarms, tracks, etc.) is far outstripping the number of operators available to monitor the data.
- The fusion of data and information from these different modalities must be also done by the operator.
- Rising operator workload is increasing the chances of the systems being ignored or being ineffective.
- Problem will get dramatically worse in the coming years as governmental agencies and industries continue to invest in security monitoring sensors through the wide application of various security grants.

Overview Outline

- Program Overview & Background
- **Program Objectives, Desired Outcomes and Approach**
- TTA-1&2: Architecture, Component and Algorithm Requirements (Miller)
- TTA-3: Hawkeye Prototype Testbed Description & Requirements (Evans)
- Proposals Process
  - Overview
    - Award Mechanisms & Funding Level
    - Procurement Schedule
    - Submitting Questions
  - Proposal Guidance and Selection Criteria
    - TTA-1&2: Architecture and Components (Miller)
    - TTA-3: Hawkeye (Evans)

Program Objectives – Mission Goals

- Enhance the ability of Federal, State and Local Law Enforcement and other homeland security functions to use increasingly extensive arrays of sensors (CCTV, radars, seismic, etc.) to be alerted to, recognize and correlate indications of unusual, criminal or terrorist activities or intent in order to allow timely response.
- Improve the efficiency and reduce the operating cost of security infrastructure networks for critical infrastructure protection, transportation hubs, ports and maritime operations by automating the sensor monitoring process.
- Create one or more demonstration prototypes that will act as a testbed for integrating COTS (commercial off the shelf)-based monitoring systems and new systems developed using innovative architectural approaches, and new components or algorithms to achieve revolutionary advances in capabilities.

Program Objectives – System Goals

- Greatly improved capabilities to fuse, correlate and interpret fragments of information derived from various sources including, but not limited to, video, radar, seismic, acoustic, and other sources by the use of mathematical, algorithmic or knowledge-based computational reasoning.
- Reduce potentially thousands of objects, tracks, events, etc. into a manageable, significant / interesting few and raise an alarm (if appropriate) based on the identification of a specific scenario, behavior, event, situation, pattern, track or object
- Integrate automated operator decision support that allows a minimum number of people to manage the entire system.
- Demonstrate capabilities in a real-world environment such as maritime surveillance, airport security, port protection, and traffic in and near secure areas and critical infrastructure.

Desired Program Outcomes

- Innovative architectural approaches that can be the basis for systems that will achieve revolutionary advances in automated scene understanding.
- New components and algorithms that can be part of new systems or can augment existing systems and provide significantly improved capabilities.
- Projections of explicit capabilities and performance characteristics of systems based on these architectures, components or algorithms.
- Technology roadmaps and development plans (including timetables) for realizing these systems.
- Projections of costs, both short term, medium term and long term for deployment and operation of these systems.
- Plans for integration of developed technologies into real-world, DHS-relevant testbed environments.
- Information for potential end users.

Additional Desired Outcomes

- Bringing analytical tools to bear on real-time and warehoused video data to extract specific information and to discover “abnormal” events that can be used to preempt criminal or terrorist behavior.

- Moving video data from the role of evidence collection into its use as an integral tool to prevent crime and terrorist activity.

- Integrating new and improved scene awareness capabilities into the DHS Hawkeye testbed in South Florida for evaluation and operations concept development.

Open Architecture Requirements

- An architecture must be *open* in the sense that each layer of the architecture must be documented via explicitly published APIs (Application Programming Interfaces) or standardized XML (extensible markup language)-based information transfers.
- An architecture must be *modular* in the sense that each specific layer of the architecture must be isolatable to a specific set of modules
- An architecture must be *scalable* and allow for one or more levels of analysis to be off-loaded / distributed to other computer systems.
- An architecture must be *evolutionary* to allow improvements in or changes to an analysis algorithm or component to be deployable entirely within the appropriate analysis layer(s) and module(s) without requiring modification of the entire system.

Open Architecture Goals

- Create a solid and stable foundation for evolution.
- Enable rapid evolution of capabilities.
- Synthesize best ideas and implementations.
- Utilize emerging utility computing capabilities to defray costs.
- Lower risk of over-dependence on a single provider.

End Users

- State and Local Governments, who through grants and other funding are increasing their monitoring capabilities.
- Borders and Transportation Security, who have the responsibility of monitoring border entry points, transportation hubs, shipping facilities, and borders themselves.
- Critical Infrastructure Protection, which has the need to enhance the security of key infrastructure elements.
- United States Coast Guard, which has the requirement to ensure security and safety of the nations coastal approaches, ports and waterways.
- United States Secret Service, which has the requirement for protection of key officials.

Overall Concept

- Integrated security and monitoring systems that use a variety of multiple heterogeneous and homogeneous sensors and information and knowledge sources.
- Sensors include but are not limited to CCTV, long range video cameras, radars, transponders, beacons or other sensors yet to be developed.
- Knowledge sources can include weather data, shipping data, AIS (automatic identification system) data, and structured and unstructured intelligence information among many others.
- Final scene awareness and alertable conditions should be able to be passed to proper authorities via networks.

Technical Topic Areas

BAA 04-05 has three specific Technical Topic Areas (TTAs):

- TTA-1 : CCTV-based scene understanding – system architecture
- TTA-2 : CCTV-based scene understanding – components and algorithms
- TTA-3 : DHS Hawkeye Testbed

TTA 1- Architecture

- Technical Topic Area 1 (CCTV-Based Scene Understanding) develops an architecture for a prototype system that supports the advanced CCTV-based scene understanding and data fusion requirements.

- Architectural studies are intended to take 8-12 months and should be bid as a whole.

TTA-2 Components & Algorithms

- Technical Topic Area 2 (CCTV-Based Scene Understanding) will develop advanced scene awareness and data fusion components and/or algorithms for new or existing systems incorporating CCTV.

- The initial performance period for components and/or algorithms is 6 months with no more than two one-year options.

TTA-3 Hawkeye Testbed

- Technical Topic Area 3 (Prototyping and Demonstration System: Hawkeye Testbed) will adapt existing or a collection of existing scene awareness capabilities into an operational rapid prototype as a part of Project Hawkeye.

- The anticipated period of performance is 12 months including integration with an option for an additional year of hardware and software support.

Overview Outline

- Program Overview & Background
- Program Objectives, Desired Outcomes and Approach
- **TTA-1&2: Architecture, Component and Algorithm Requirements (Miller)**
- TTA-3: Hawkeye Prototype Testbed Description & Requirements (Evans)
- Proposals Process
  - Overview
    - Award Mechanisms & Funding Level
    - Procurement Schedule
    - Submitting Questions
  - Proposal Guidance and Selection Criteria
    - TTA-1&2: Architecture and Components (Miller)
    - TTA-3: Hawkeye (Evans)

TTA-1 & 2 Application Description

- One or more fixed and/or (possibly) movable CCTV cameras which are used to monitor a physical space (e.g. a fence outside a factory, a plant floor, a port, a marine waterway, a subway station, a roadway approach to a building or an airport concourse).
- The output of the cameras is fed into television monitors and into a computer analysis system.
- The analysis system can analyze scenes, recognize objects, tracks, situations, events, behaviors and scenarios (ranging from simple to complex).
- It can raise alerts for a class of events that range from detection of motion, scene changes, to environmental changes and behavioral scenarios.

TTA-1 & 2 Requirements Overview

- It is not required that a prototype system based on a innovative architecture or incorporating a new component or algorithm meet all the requirements specified in BAA 04-05 immediately.

- It is expected, however, that systems based on a new architecture and incorporating new components and algorithms will support meeting those requirements over time.

- Therefore, architectural or component/algorithm specifications must take cognizance of the requirements as specified.

Environmental Invariance

- Operate over a wide range of general environmental conditions such as lighting, weather, and sea state among others. However, in any specific installation, the expected environmental variation must be reasonable.

- Operate over a wide range of environmental variations such as fixed scene changes and mutations (e.g. addition of a sign to a background or adding new paint to a wall).

- Should be unaffected by image instability caused by camera jitter (e.g. wind induced) and motion (e.g. sensor onboard an underway patrol craft).

Motion Detection

- Detect the motion of objects in a scene including objects entering or leaving a scene or moving within a scene.

- Detect motion of a wide range of object types, sizes and degrees of motion including people walking, running or moving very slowly, vehicles of varying sizes and animals.

Motion detection includes detecting the motion of sub-objects. We are interested in complex behaviors including arm and facial movements among others.

Spatial and Temporal Programming

- Should be programmable to divide a scene into a collection of regions and region borders each with possibly different alert criteria.
- Should be able to "glue together" scenes that arise from different cameras (from scanning/dwelling as well as staring), handle transitions between them and treat a collection of camera scenes as a single unit.
- Should be programmable to recognize different alert criteria depending on time of day, day of week and specific date.
- Trained end-users should be able to program the system in all of its aspects.

Object Class Recognition

- Should be able to recognize an instance of an object class (e.g., a truck, a car, a particular type of car, a person, a vessel, or a package).

Object class recognition and object instance recognition may depend on the resolution of the system. The architecture should permit ancillary knowledge or the output of other sensors to contribute to the recognition process in lower resolution systems.

Individual Object Recognition

- Should be able to recognize a specific instance of an object class (e.g. a specific person or vehicle or class of vessel).

  Clarification: The requirement is to be able to recognize a particular person, a particular vehicle, a particular vessel, a particular package etc.

- Should be able to distinguish multiple specific instances of multiple object classes in a scene.

Anomalous Object Instance Recognition

- Should be able to specify a set of templates consisting of features that define a 'normal' instance of an object class (e.g., should be wearing appropriate clothing).
- Should be able to recognize anomalous instances of an object class – i.e. an instance that does not match one of the normal templates (e.g. wearing a coat in warm weather as an indicator of possibly carrying explosives).
- Should be able to recognize behavior anomalous for the class of object (e.g., moving in an unusual way, unusual aspect or unusual configuration).

Object Compositing and Decomposition

- A single object should be decomposable into a set of sub-objects (e.g. a person consists of a torso, a head, arms and legs).

  The relationship among objects and sub-objects should always be maintained.

Object Compositing

- A set of objects can be treated as a single composite object (e.g. a person carrying a package).
- A set of objects can merge into a composite object (e.g., a person can pick up a package), which can then be treated as a single (composite) object.
- A composite object can be split (e.g., a person can leave a package), which is then treated as multiple (but still related) objects.

Camera Control

- Intermediate results at any level of the analysis should be able to control the parameters of the camera(s) include activation, panning, skewing, zooming, etc.

Control of any other connected sensor by the analysis system should be supported in the architecture.

Object / Sub-Object Tracking

- Should be able to tag and track any object instance through its range of motion in a scene.
- Should be able to track any sub-object of an object through its range of motion in a scene (e.g., the motions of a person's arms).
- Should be able to track object merging and splitting through the entire range of motion.
- Should be able to track multiple object instances simultaneously without ambiguity.

Scene Feature Extraction

- Extract text from license plates, trucks, and vessels for real-time analysis.
- Extract a number of operating states for vessels (or vehicles) (e.g. a vessel underway, planning, adrift, at anchor, under sail, fishing, etc.)
- Recognize prohibited behavior such as dumping from a vessel or tailgating through a secure door.
- Extract salient vessel (or vehicle) characteristics (e.g. vessel width, length, height, freeboard, structural outline, IR [infrared] signature) at tactically useful ranges and independent of vessel (or vehicle) aspect.

Scenario Programming and Matching

- Scenarios that include collections of object classes, object instances, paths, regions, events, temporal and spatial relationships and behaviors should be programmable.
- The programming system for specifying scenarios must support multiple levels of abstraction and expressivity in order to support complex programming tasks normally performed by professional programmers and less complex programming tasks that could be performed by sufficiently trained end-users.
- Observed objects, events and behaviors can be aggregated into scenarios and matched against a database of pre-programmed scenarios. The aggregation process should also be programmable.
- Matching a scenario should be able to cause an alert. Not matching a (normal) scenario should also be able to cause an alert. Alerts should be customizable.

Training By Example

- Should be able to train the system to establish baseline situations, behaviors and scenarios through processing steady-state / normal real-time video data or by processing corpuses of examples.
- Training should include automated or system-aided synthesis of normal scenarios.
- Training can be augmented by user-directed programming.

Operating Modes

- The system should operate in real-time or near real-time.
- In non real-time mode, the system should be able to operate on and analyze recorded digital video stored in an archival warehouse.

Scene Tagging and Description

- Provide a method for attaching descriptive metadata to scenes.
- Add metadata to scenes automatically or manually.
- Search archival databases using metadata queries.

Data Transformation and Fusion

- The output of the analysis system must be in such a form that it can easily be transformed as necessary to provide input to a data fusion system that merges different real-time and/or non-real time data.
- The derived data stream consisting of the summary of the scene analysis should either be in a recognized standard form or be easily transformable into such a form.
- Should have the ability to combine data from multiple and possibly different sensors and use the results to make inferences about a physical entity or situation that may not be possible or accurate with a single sensor.
- Should have the ability to combine data from sensors and databases and use the results to reduce uncertainty in the inferences made about physical entities or situations and to detect anomalies between combined sensor outputs and databases.

False Alarm Rate and Alerting

- The false alarm rate and alerting thresholds should be adjustable and determined by the environment, application and system sensitivity settings.

TTA-1 Deliverables - 1

- A review of the current state of research in automated scene awareness (including data fusion) and a gap analysis with respect to the capabilities of the proposed architecture.
- A detailed architectural specification of the scene awareness system that meets or exceeds the requirements described above. The specification should include:
  - Diagrams and functional specifications for each level of the architecture
  - Interface descriptions for each level of the architecture
  - Modular decomposition of each level of the architecture
  - Component-level functional descriptions
  - Concept of operations for systems built using the architecture

TTA-1 Deliverables - 2

- A proposed demonstration prototype system based on the proposed architecture and a plan for implementing the demonstration prototype system including timing for delivery of different functional components and requirements for system integration.
- A strategy and architecture for multi-sensor, multi-level data information / knowledge fusion.
- A plan / proposal for integrating the demonstration prototype system into a real world, DHS-relevant testbed environment.

TTA-2 Deliverables

- A detailed description of the particular component or algorithm including:
  - principles of operation
  - mathematical background,
  - functional description
  - interfaces
  - current state of development
  - estimated performance characteristics
  - systems integration strategy

Overview Outline

- Program Overview & Background
- Program Objectives, Desired Outcomes and Approach
- TTA-1&2: Architecture, Component and Algorithm Requirements (Miller)
- **TTA-3: Hawkeye Prototype Testbed Description & Requirements (Evans)**
- Proposals Process
  - Overview
    - Award Mechanisms & Funding Level
    - Procurement Schedule
    - Submitting Questions
  - Proposal Guidance and Selection Criteria
    - TTA-1&2: Architecture and Components (Miller)
    - TTA-3: Hawkeye (Evans)

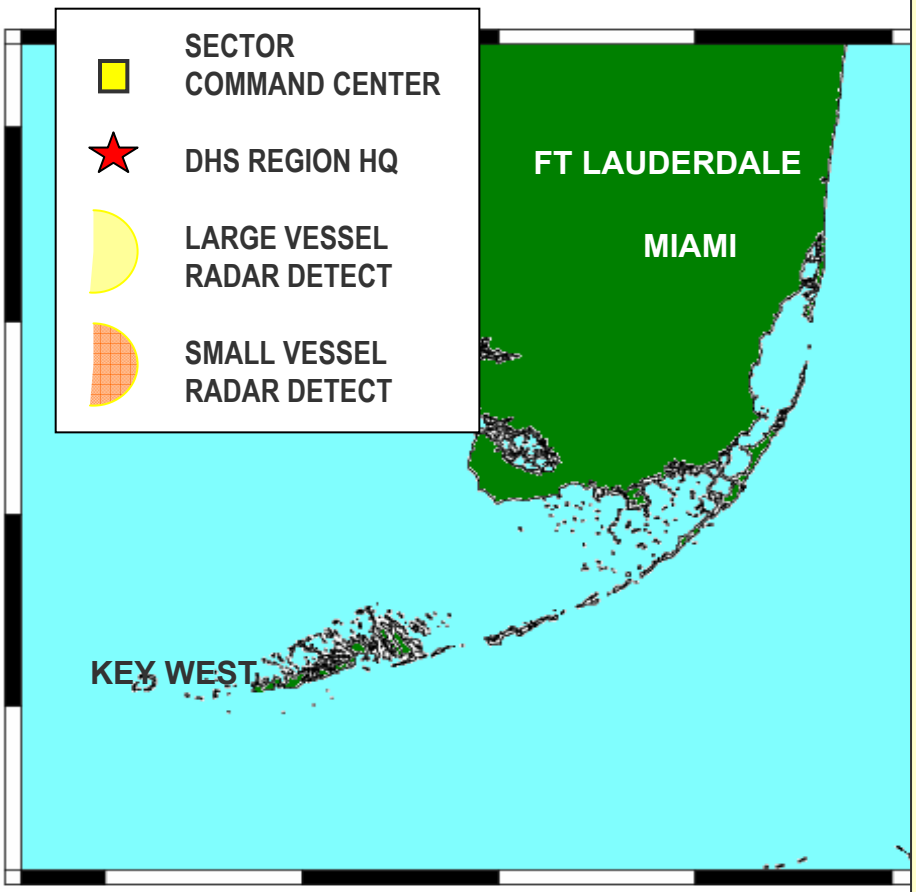
TTA-3 Background - 1

TTA-3 initiates a program for the development of and deployment of scene-awareness software that will integrate:

- radar data
- radar track data
- optical (video)
- infrared image streams
- positioning information from an Automatic Identification System (AIS)
- other data inputs

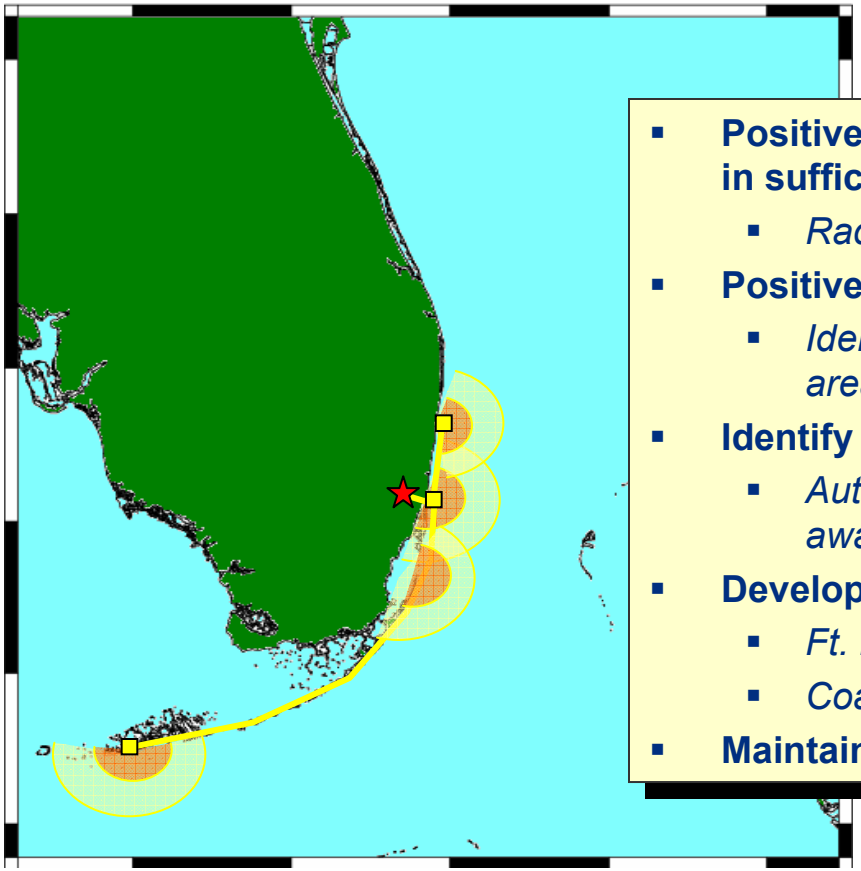
to provide machine understanding of the coastal and port security scene and enhance vessel detection, evaluation, and tracking in support of tactical analysis and intercept decisions.

HAWKEYE



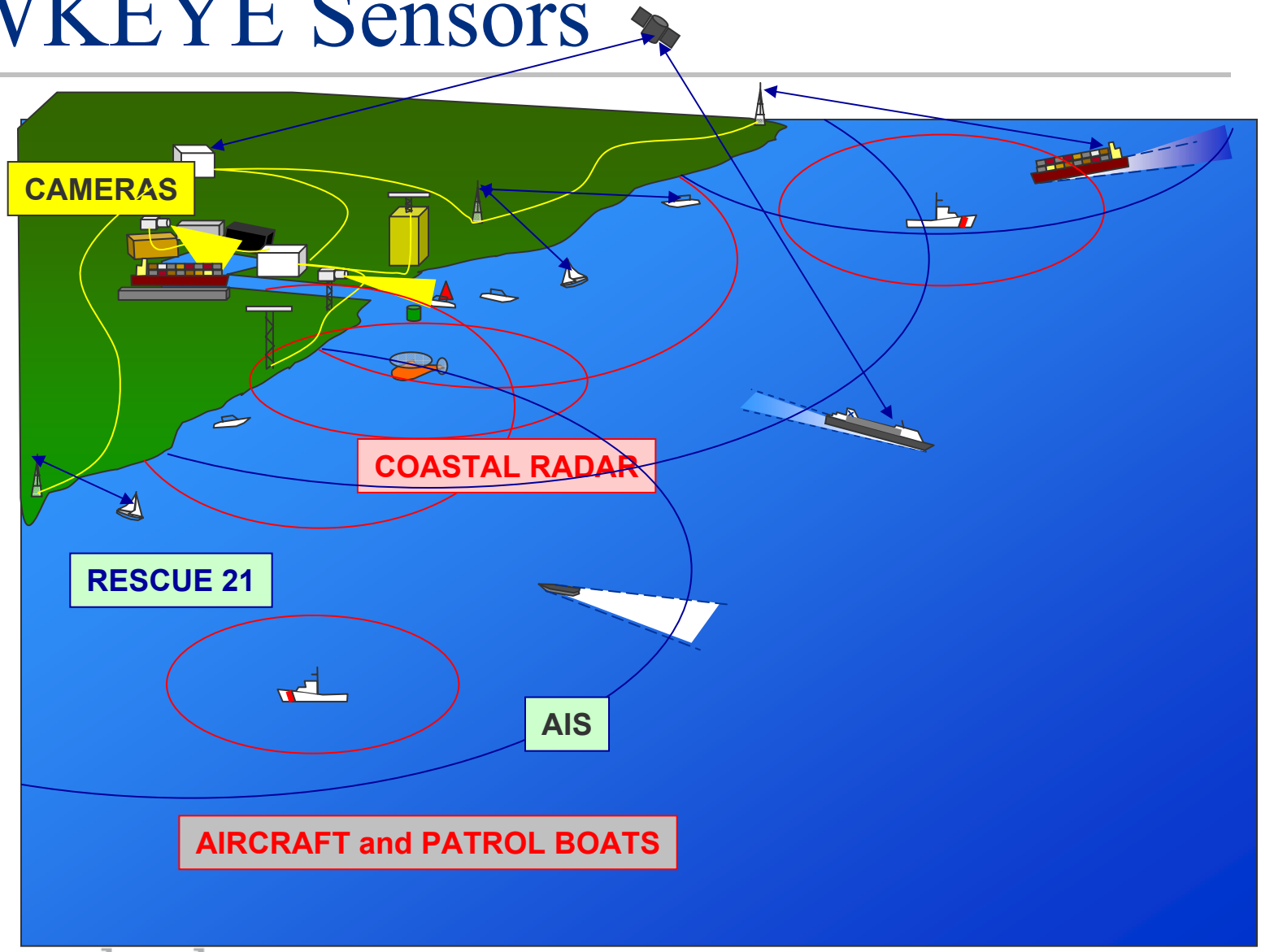
- **Networked Coastal and Port Surveillance Sensors**
  - COTS maritime radars
  - Visual and IR cameras
  - Automated Vessel Identification Systems (AIS)
  - Follow on OTH Sensors
- **Prototype Sector Command Center**
  - Maritime and coastal domain awareness software and displays
  - **Automated Scene Understanding**
  - Common Operational Picture
  - Communications with mobile units and responders
- Evolutionary prototype
  - Follow-on Coast Guard Sector Command Centers (~ 40)
  - Testbed for continued upgrades
    - Rapid insertion cycle through open architecture

Operational Requirements



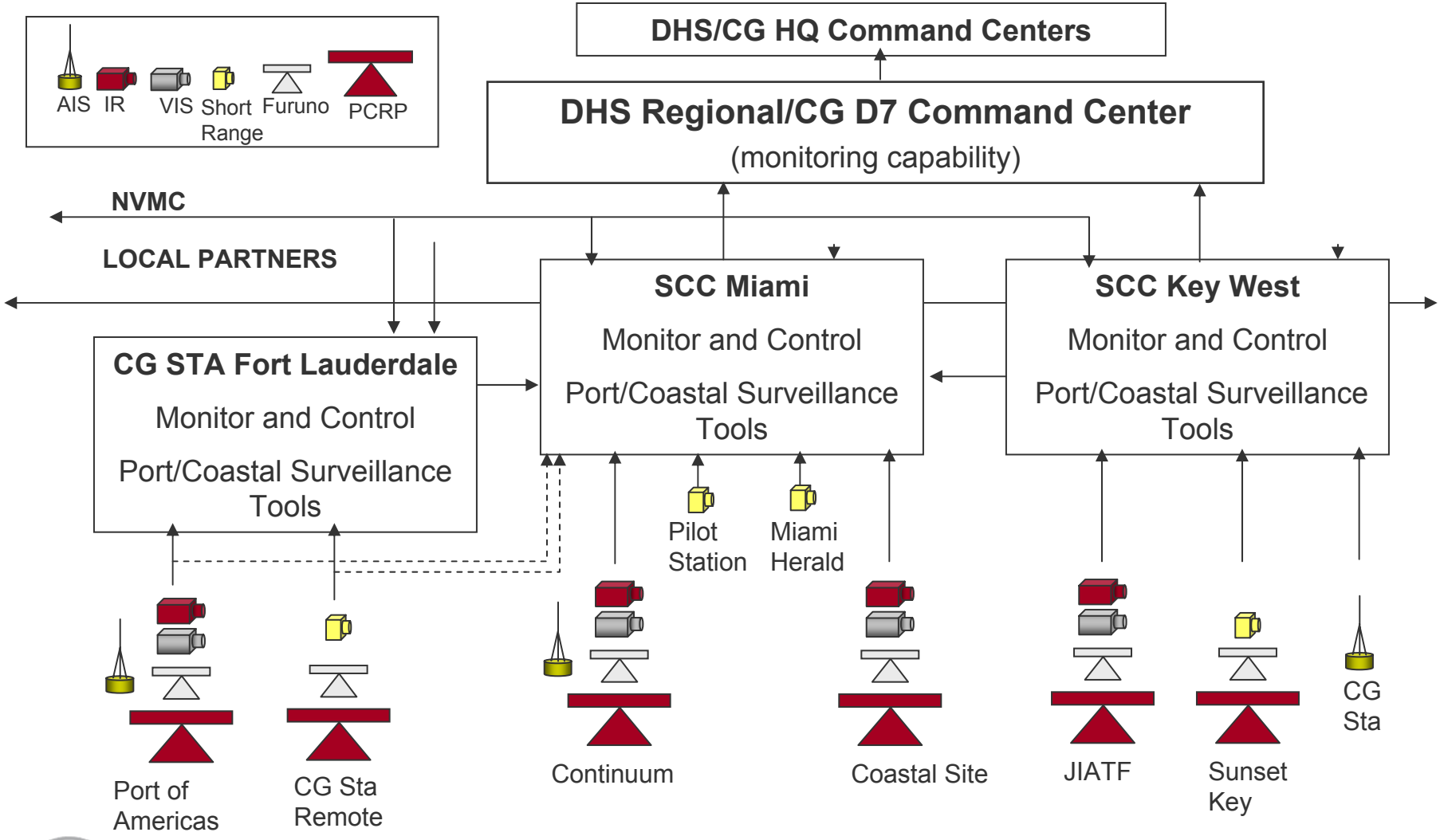
- **Positively identify all vessels approaching U.S. ports in sufficient time to intercept and inspect if required**
  - *Radar detection and tracking of 25' boat within 12 nm*
- **Positively identify all vessels (over 25') in U.S. waters**
  - *Identification and monitoring of vessels within port area*
- **Identify unusual or illegal behavior**
  - *Automated scene understanding: one scene awareness watchstander*
- **Develop and share a Common Operational Picture**
  - *Ft. Lauderdale, Miami and Key West*
  - *Coast Guard – DHS – Law Enforcement*
- **Maintain the flow of commerce**

HAWKEYE Sensors



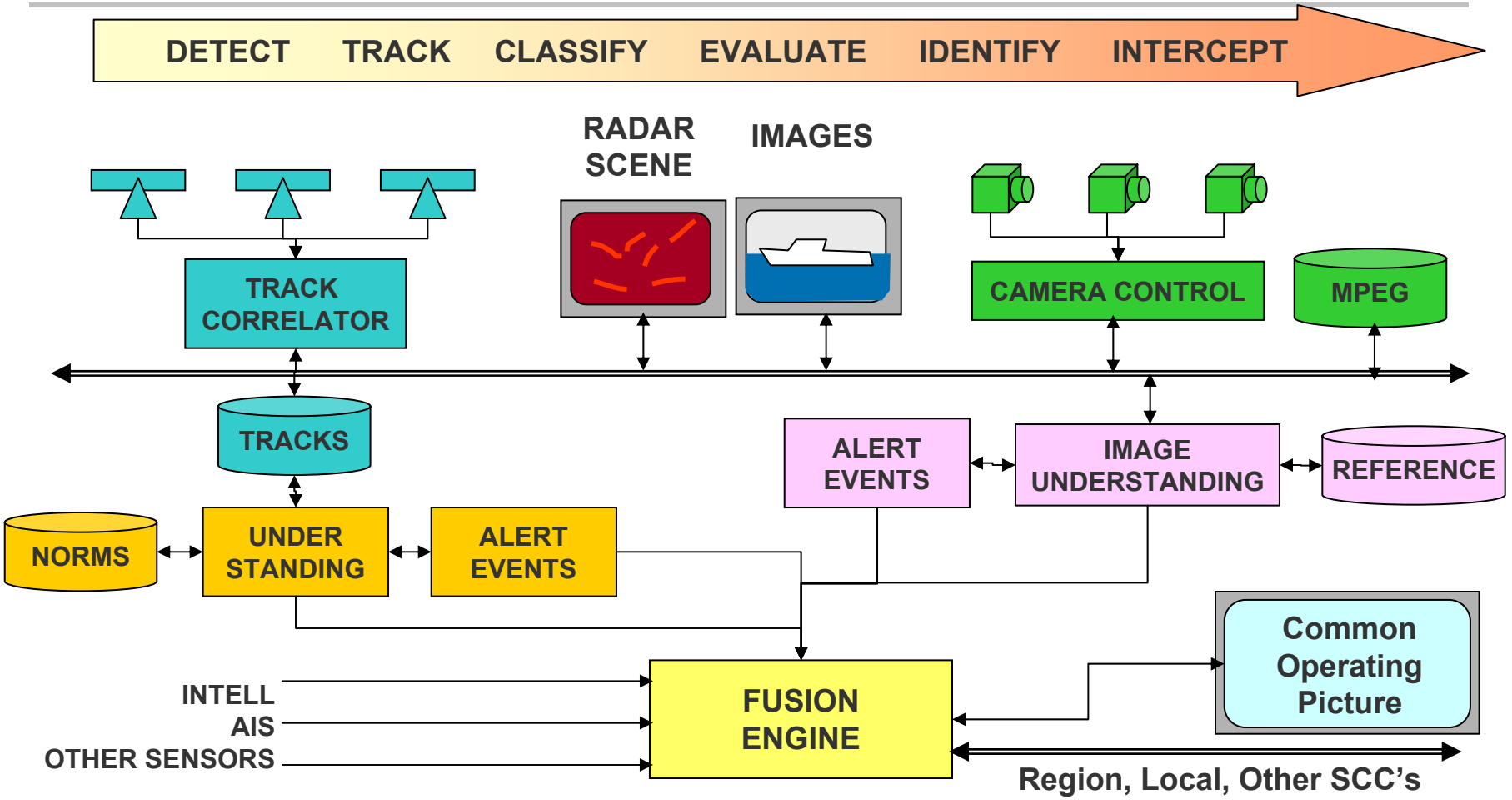
Homeland Security

HAWKEYE Architecture



Homeland Security

Scene Awareness Automation



THIS ARCHITECTURE IS PROVIDED FOR ILLUSTRTIVE PURPOSES ONLY

Homeland Security

Operational Challenge

- **Information Sources**:
  - Many screens of camera scenes
  - Numerous radar tracks to monitor and evaluate
    - *Hawkeye radar processor will provide fused track acquisition*
  - AIS and Blue force information: position (and status) reports
  - Common Operational Picture
  - Maritime and government databases
  - USCG (United States Coast Guard) patrol reports
  - Port Partner organizations (Marine Wildlife and Fisheries, ICE [Immigration and Customs Enforcement], and law enforcement
- **SCCs will have limited staffing resources with which to track and evaluate hundreds of vessels**
  - Long term goal: two person watch
    - Automation of scene understanding and courses of action

Correlation of multiple sensor inputs into one presentation and automatic recognition of suspicious, unusual, dangerous, prohibited or other actionable behavior is mandatory.

Functions

- Alerting to potential terrorist threats or behavior
- Alerting to potentially unsafe or dangerous behavior
- Monitoring vessels designated to be of interest
- Alerting to unsafe boating or operation of vessels in a hazardous manner
- Alerting to violation of environmental laws and regulations including fishing regulations
- Alerting to potential illegal immigration operations
- Alerting to potential smuggling operations
- Alerting to vessels potentially in distress

Objectives

- **Fusing** data and information from more than one sensor system (e.g., optical and radar) and information from other information sources (e.g., AIS, maritime and security databases, Blue Forces position data)
- Software solutions focused on accurately identifying **suspicious, dangerous and prohibited behavior** by vessels
- **Allocating sensor assets** to evaluate vessels of interest
- Flexibly and automatically adapting to changing situations and conditions, both through **machine learning and operator input**
- Providing a **high probability of correctly alerting** to suspicious, dangerous and prohibited behavior by vessels being surveilled in the port and coastal environments.
- Maintaining a very **low false alarm rate**.

Strategy

- Adapt an **existing or collection of existing** scene awareness capabilities into a operational rapid prototype.
- One or more contracts will be awarded for rapid prototype development and demonstration.
- A **prototype system solution** that will be **integrated into the Hawkeye SCC** in Miami, FL and operated in actual operations to assess the technology's operational utility and develop operational procedures.

It is desired that the software resulting from this BAA is the beginning of a continual improvement in target identification and anomaly detection sophistication and as such it must meet the architecture criteria of TTA-1.

Deliverables

The contractor will be required to:

- Design, develop, demonstrate, and deliver software which is open-architected (and employ high-level software languages as much as possible) and hardware for demonstrating system performance (with emphasis on operational suitability) within approximately twelve months.
- Integrate into one Coast Guard Sector Command Center (SCC).
- Provide hardware and software maintenance (to include on-scene repair and software troubleshooting and patches) support for their fielded system at the SCC for six months following delivery and, as a option, for another year.

General Requirements

- The system will normally operate in the background, only alerting operators when anomalous, suspicious or prohibited behavior is detected.
- When fully implemented, the system will be a software and COTS hardware capability integrated with the SCC software.
- The outputs from the system will be monitored by one or more operators.
- The system will simultaneously monitor radar tracks, video information, and position reports to generate, classify, correlate, track, identify, and assess the threat level of vessels within the sensors fields of view.

Radar Level Detection

- The system will monitor radar tracks from multiple radars (the tracks may be already fused when the system receives them) and analyze them for:

  - Anomalous behavior - behavior that is not normally seen in a particular context and therefore is worthy of further surveillance and evaluation.
  - Suspicious behavior – behavior that may fit, to some degree of correlation, to one or more predetermined threat scenarios.
  - Prohibited behavior – behavior that violates one or more “rules” preset by the operators.
  - Upon determination of any of the above, the system will generate an alert.

Camera Level Detection

- The system will monitor the image stream from multiple optical and infrared cameras and analyze them for:

  - Objects (particularly vessels in view of the camera, to include a classification of object type and size (including vessel classification).
  - Object position, velocity and velocity characteristics (vessel planning, sea keeping, etc).
  - Anomalous behavior - behavior that is not normally seen in a particular context and therefore is worthy of further surveillance and evaluation.
  - Suspicious behavior – behavior that may fit, to some degree of correlation, to one or more predetermined threat scenarios.
  - Prohibited behavior – behavior that violates one or more “rules” preset by the operators.
  - Upon detection of any of the above, the system will generate an alert.

Correlation, Identification and Target Package

- The system will correlate radar tracks and optical objects, and initiate a Target Package that includes radar position, track, optical information and results of radar and optical analysis.
- The system will initially classify each target (e.g., unknown high speed, sailing vessel, cruise ship, etc) based on track analysis, visual imagery and other information.
- The system will also correlate targets with automatic identification data streams, such as the AIS system and Blue Force locators to provide, where available, target identification.
- The system will generate a formatted (OTH GOLD) target report to be passed to the (separate) Common Operating Picture (COP)

Target Analysis

- The system continues further analysis to classify and identify the vessel, its behavior, degree of interest, threat or actionable behavior . Such analysis may consist of: correlation of radar tracks with other sensor information, retrieval of similar historical events, and database searches for correlating and relevant information in order to conduct automated assessment of suspicious behavior.

- Operator input of specific suspicious behaviors should be ingested and acted upon but should not be required for system performance.

- The system shall maintain and display a continuous assessment of target interest level and priority.

Alerting

- Upon achieving a threshold in interest or priority, the system will alert the operator and provide her or him the Target Package and basis of the alert.
- The operator will be able to modify the target classification, interest level, identification, analyzed behavior and status.
- Based on alerts the system provides or other information, the operator shall be able to designate a target as a Flash Target which will then be continuously monitored using all available sensors and data systems. Examples of a Flash Target may include a potential vessel out of control, vessel in distress, terrorist attack, indications of an illegal landing, etc.
- The system will initiate recommendation of courses of action for a Flash Target.

Post-Analysis

- The system will track recording and analysis sufficient to reveal patterns and behaviors and changes to patterns, behaviors and routes used by vessel traffic. This capability will be integrated with a graphical information systems (GIS) and results provided in GIS-compatible coordinates.

- The system will archive the Target Package for forensic analysis and later comparison with subsequent detection of the same target.

- The system will provide automatic, time-stamped logging of internal messages and system states to support real-time and post analysis of system operation and comparison of system states and activities to actual system inputs.

Scenarios and Rules

- The system should be capable of allowing operators to easily insert new behavior rules, such as “watch and alert if vessel turns south”.

- The system should permit input of separate sets of behavior rules corresponding to Maritime Security (MARSEC) levels 1, 2 or 3, that can be recalled and put into operation by the operator.

Alerting Rates

- The system should be capable of adjusting the priority of alerts to produce a desired false alarm rate.
- The system should provide a straightforward methodology for adjusting false alarm rates.
- The false alarm rate and alerting thresholds should be adjustable and determined by the environment, application and system sensitivity settings.

Operator Interface

- Time and latitude/longitude of suspicious radar tracks and radar tracks exhibiting prohibited behavior will be automatically ingested into, and displayed in, a GIS at (*tbd*) intervals.

- Time, latitude/longitude, velocity vector, and velocity characteristic of optically detected suspicious objects and objects exhibiting prohibited behavior will be ingested into, and displayed in, a GIS at (*tbd*) intervals

Modes of Operation

- The system will have a real-time operational mode (normal)
- The system should have an offline test and evaluation and training mode.
- The system should have a forensic mode, i.e.: be able to play back information and events following an event of interest.

HAWKEYE Interface Considerations

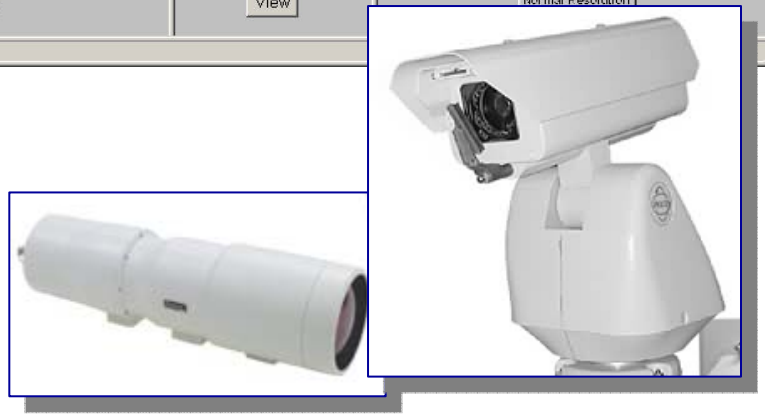
- CDR Gordon Weeks, USCG
  - Coast Guard Command and Control Center,
  - Portsmouth, VA

- Coast Guard Command and Control Center is HSARPA's technical agent for HAWKEYE integration and implementation
  - Lead CG organization for CG C4I

System Capabilities- Cameras

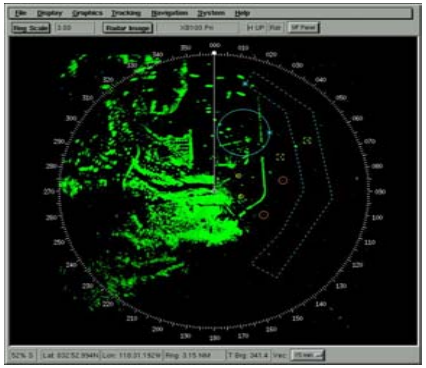
- Supports Medium and Long Range Optical Cameras
- Supports long range Infrared camera
- Camera can be slewed to radar track
- Camera can be controlled from multiple sites or the Internet

Long Range – USCG design
Mid Range – COTS – Pelco Esprit
Long Range IR – FieldPro 5X 3 – 5 μ



System Capabilities- Radar

- Supports Medium and Long Range Image Display and Tracking
- Automatic/Manual Target Acquisition
- Small Target Detection and Tracking (Jet Skis and Larger)
- System Tracks and System Images
- Alarms for Size, Speed, Time



Furuno 10 ft medium range radar (FR 2125 variant)

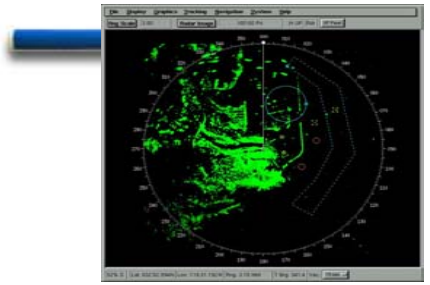
- 25 kW power, 0.75 deg beam
- SSR Engineering PC Radar Processor
- Moving Target Detector (MTD) and automatic track generation

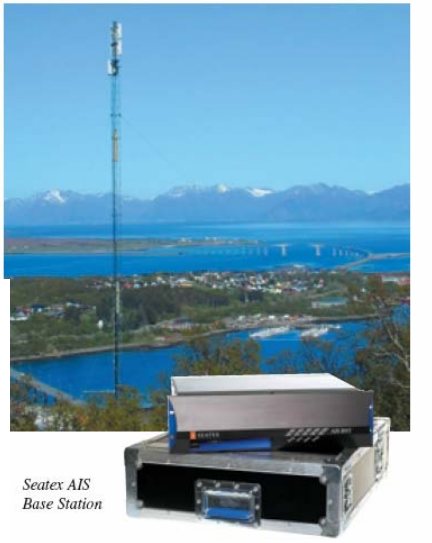
Folllow-On Radar:

TERMA

Sensors

- Radar
  - Furuno 10 ft medium range radar (FR 2125 variant)
    - 25 kW power, 0.75 deg beam
  - SSR Engineering PC Radar Processor
    - Moving Target Detector (MTD) and automatic track generation
- Automated Identification System (AIS)
  - Seatex AIS Base Station
    - Receipt of AIS signals from vessels within ~ 60 nm
- Cameras





Seatex AIS Base Station

Blue Force Tracking

- AIS based
  - Two options for shipboard
  - Standardized base stations
  - Shore based Blue Force software
- Non-secure and secure mode
  - In non-secure mode units and base stations will operate as standard AIS
    - Mobiles can send and receive broadcast and addressed text messages
    - Shore can send and receive broadcast and addressed text messages
    - Shore will broadcast tracks via VTS application messages
  - In secure mode blue force units and shore will stop transmitting vessel information and text messages in the clear
    - Enabled / disabled from shore via application message
    - Enabled shipboard from MKD and/or ECS
    - Mobiles and shore receive and process all standard messages
    - Mobiles and shore encode all information in applications prior to transmission
    - Mobiles and shore decode all encoded messages in to standard messages

Automated Identification System (AIS)
Seatex AIS Base Station
Receipt of AIS signals from vessels within

Seatex AIS Base Station

Software Architecture

- 4.7.x Integrated C4I System Framework (ICSF) provides COE/COP support
  - Tactical Management System (TMS) / Tactical Management System Visualization
  - Overlays
  - Alerts
  - Universal Communications Processor (UCP) and Message Processing (e.g. OTH broadcast)
  - COP Sync

- CG segments provide sensor integration,display, and decision support
  - Charting - SCCS
  - Alarms - VTS
  - Track management - VTS
  - Radar control and monitoring – VTS
  - Radar video - SCCS
  - AIS message processing and display – VTS

- Web server databases and HMI's
  - Win 2000 / ORACLE Server
  - Vessel, facility, schedule, and anchorage databases
  - HMI's for vessel information, scheduling, transit management, and reports

MDA Databases

- Databases
  - Vessel Information (MISLE)
  - Facility Information (MISLE, Army Corps of Engineers)
  - Anchorage information (NIMA, NOAA)
  - Transit information (arrival, departure, movement)

MDA Web Client

- User Management (remotely managed)
  - Database and functions enabling system administrators to add, modify, and delete user accounts and manage access.
- Situation Display
  - Display of a COP comprised of: waterway characteristics including channels, aids to navigation, and anchorages, waterfront facilities including terminals, piers, wharves, and berths, radar image overlay, a vessel traffic situation display depicting transiting, docked, moored, and anchored vessels derived from track radar, AIS, and manual user inputs
  - Interactive “GIS-like” functionality enables a user to select display entities such as piers and vessel tracks, resulting in the retrieval and display of physical characteristics, schedule, cargo, crew, passenger, and status information.

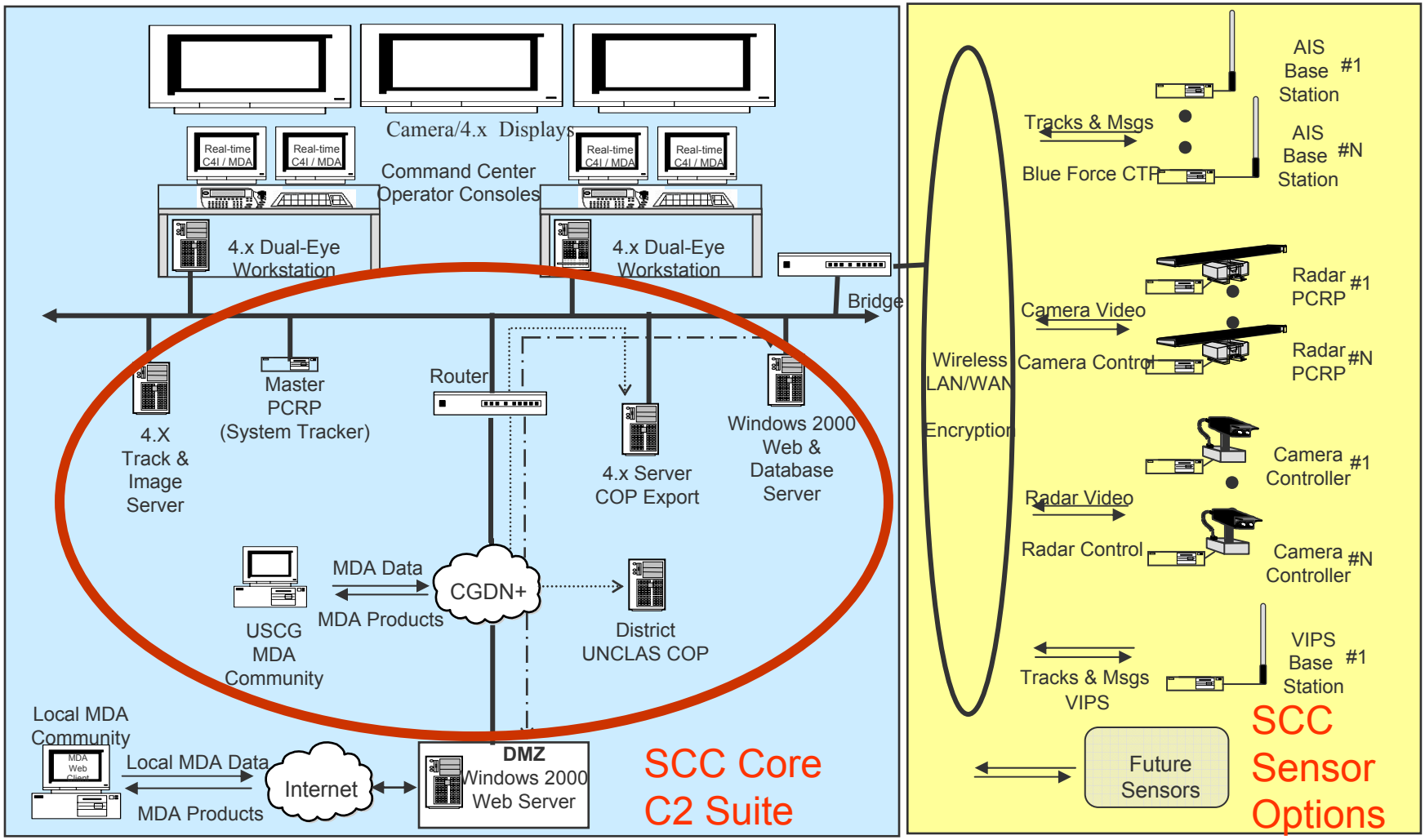
MDA Web Client

- Electronic Filing
  - Interface to the USCG National Vessel Movement Center (NVMC) for automated exchange of notice of arrivals and departures.
    - National filing capability will support automated receipt and processing of arrival and departure notices filed nationally by vessel operators via the NVMC.
    - Local filing capability will enable vessel operators scheduling local visits via the MDA system to automatically file nationally with the NVMC, and to automatically file standard forms with the local US Customs office, USCG MSO, and Port Authority.
- On-line Reports
  - Canned and ad hoc on-line reporting functions.
    - Canned reporting capability supports automated generation, viewing, and printing of pre-defined vessel and facility forecasts, schedules, and activity logs.
      - Reports are generated using pre-defined, fixed query criteria and formats.
- Camera Video Display
  - Operator selection of camera
  - Display of JPEG images

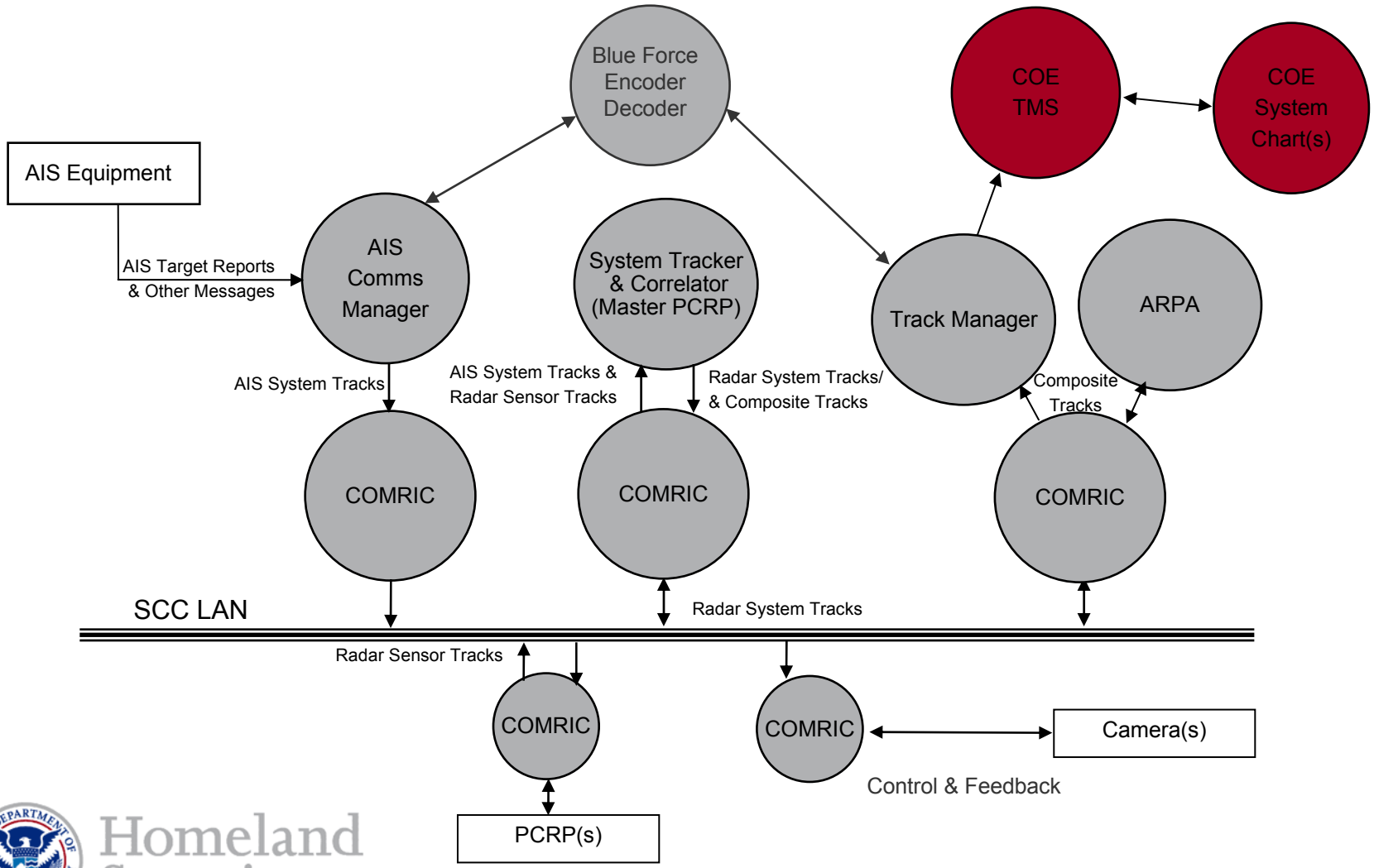
MDA Web Client – Cont.

- Bulletin Boards
  - Provides the capability for users to post, review, and delete documents and user messages to electronic bulletin boards.
- Change Auditing
  - Enables users to obtain information regarding the time of last update and name of the user updating vessel schedules and status.
- Alarms and Alerts
  - Enables users to be automatically notified of conditions such as: requests for user accounts, attempted unauthorized system access, entry or changes to vessel schedules, changes to vessel disposition such as arrival, docking, sailing, or departure, detected arrivals or departures by unscheduled vessels, vessel violation of security and safety zones, unscheduled vessels leaving anchorages, and conflicts in expected and detected vessel attributes.
  - Notifications consist of an on-screen alerts or e-mail messages. Without modification, this mechanism can be extended to take advantage of text messaging offered by commercial cell and paging providers, enabling mobile users to receive notifications via cell phones and alphanumeric pagers.

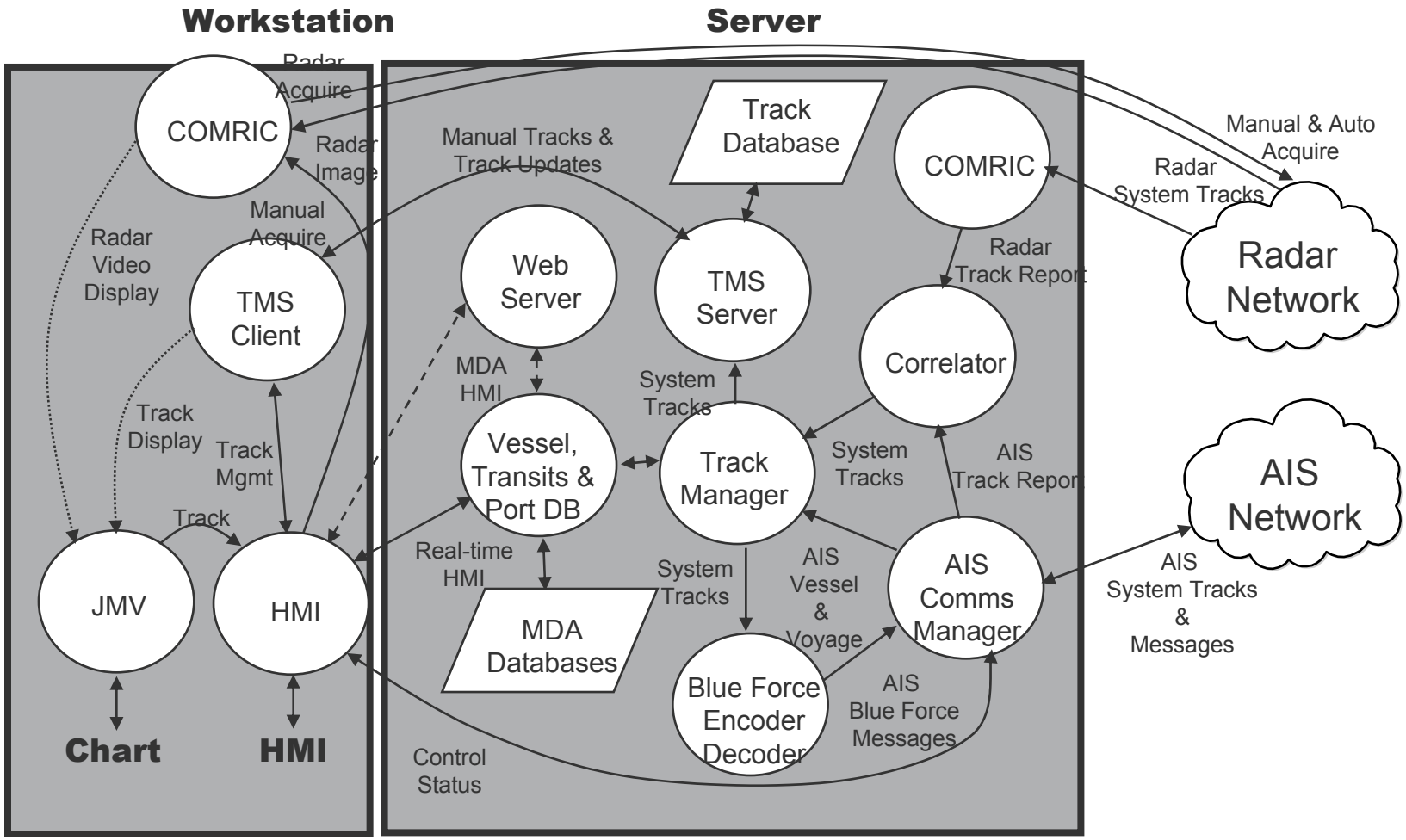
Hardware Architecture



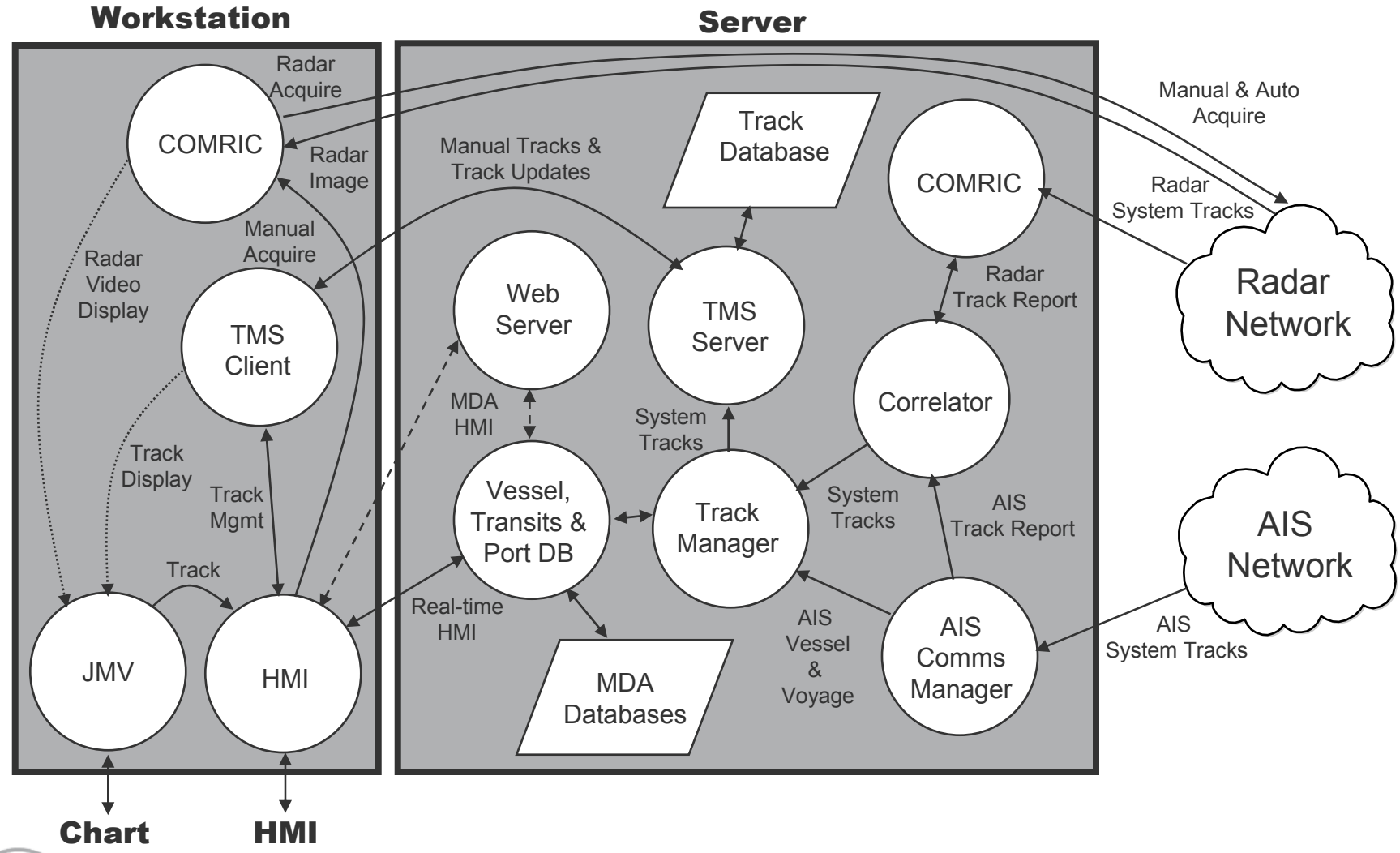
Design and Integration



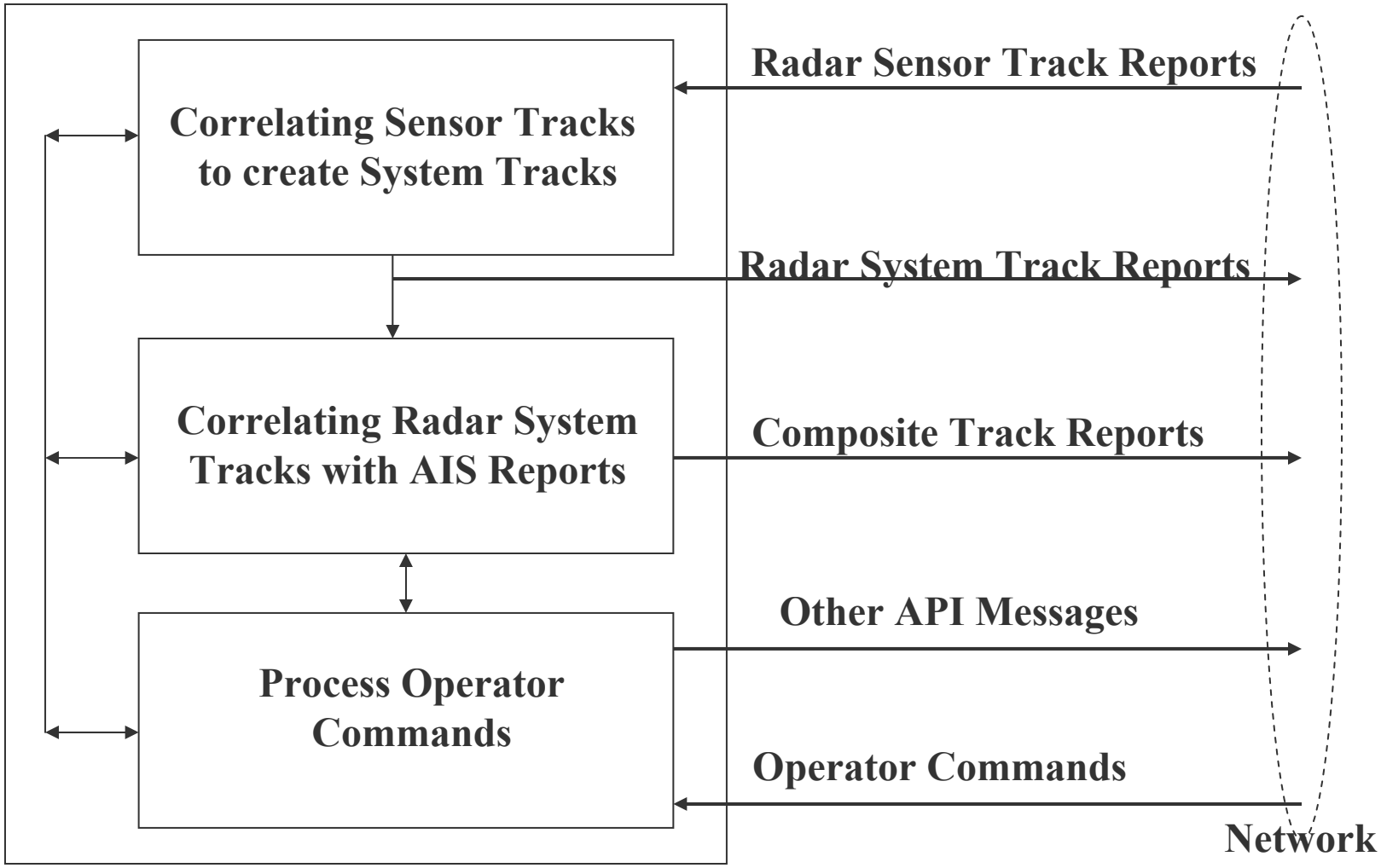
Hawkeye Solution



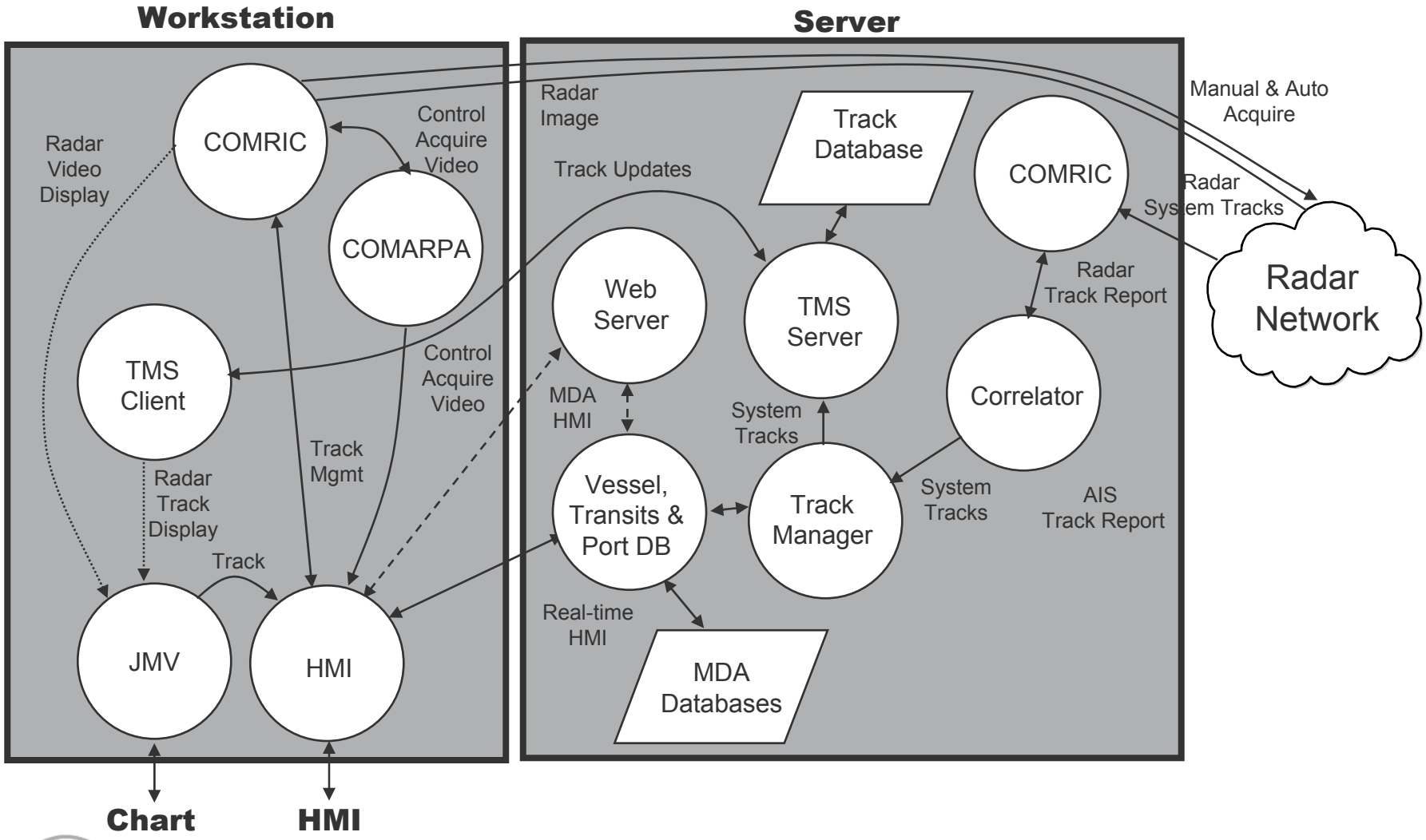
Track and Transit Management



Correlator Utilizing "Sensor Tracks"



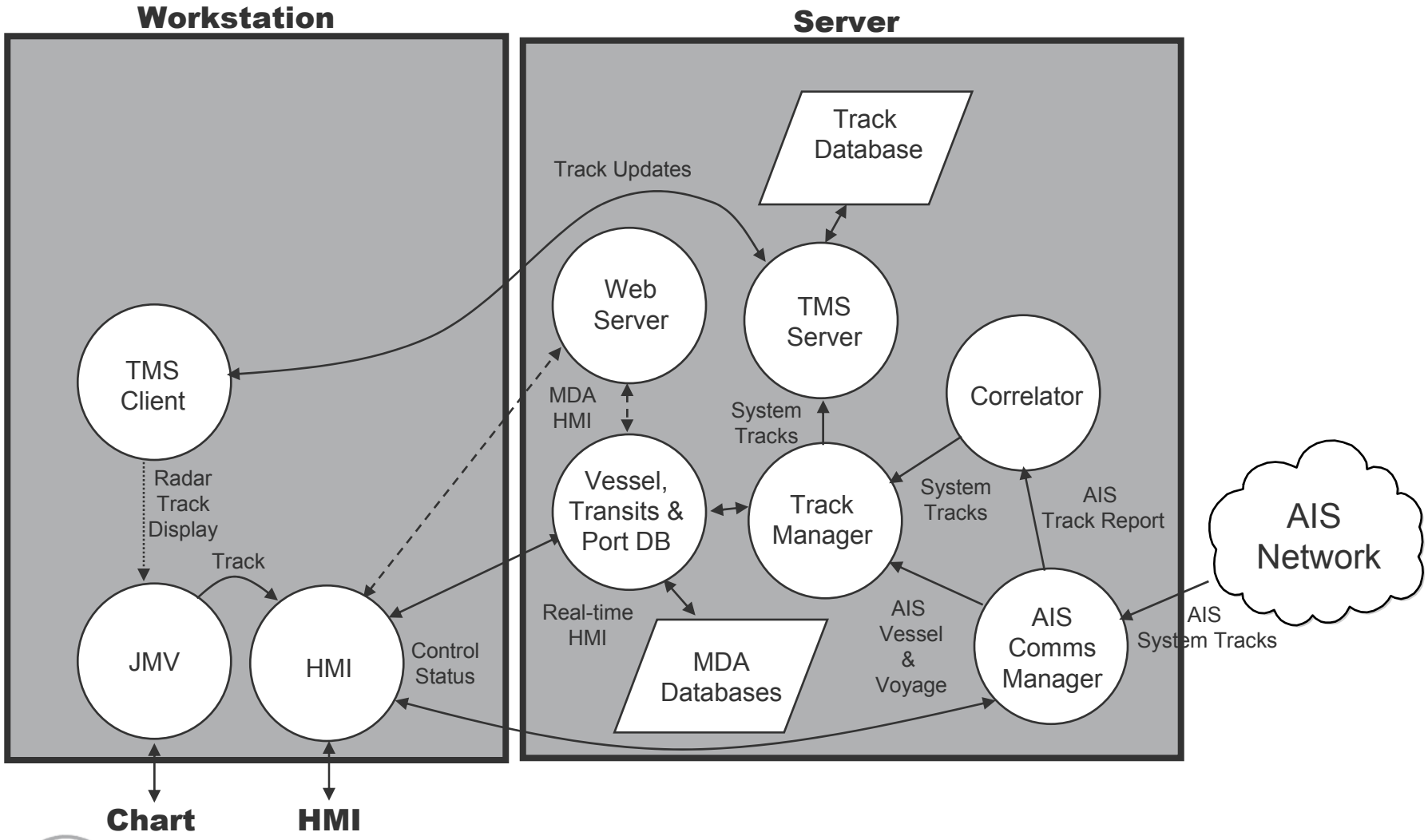
Radar Surveillance



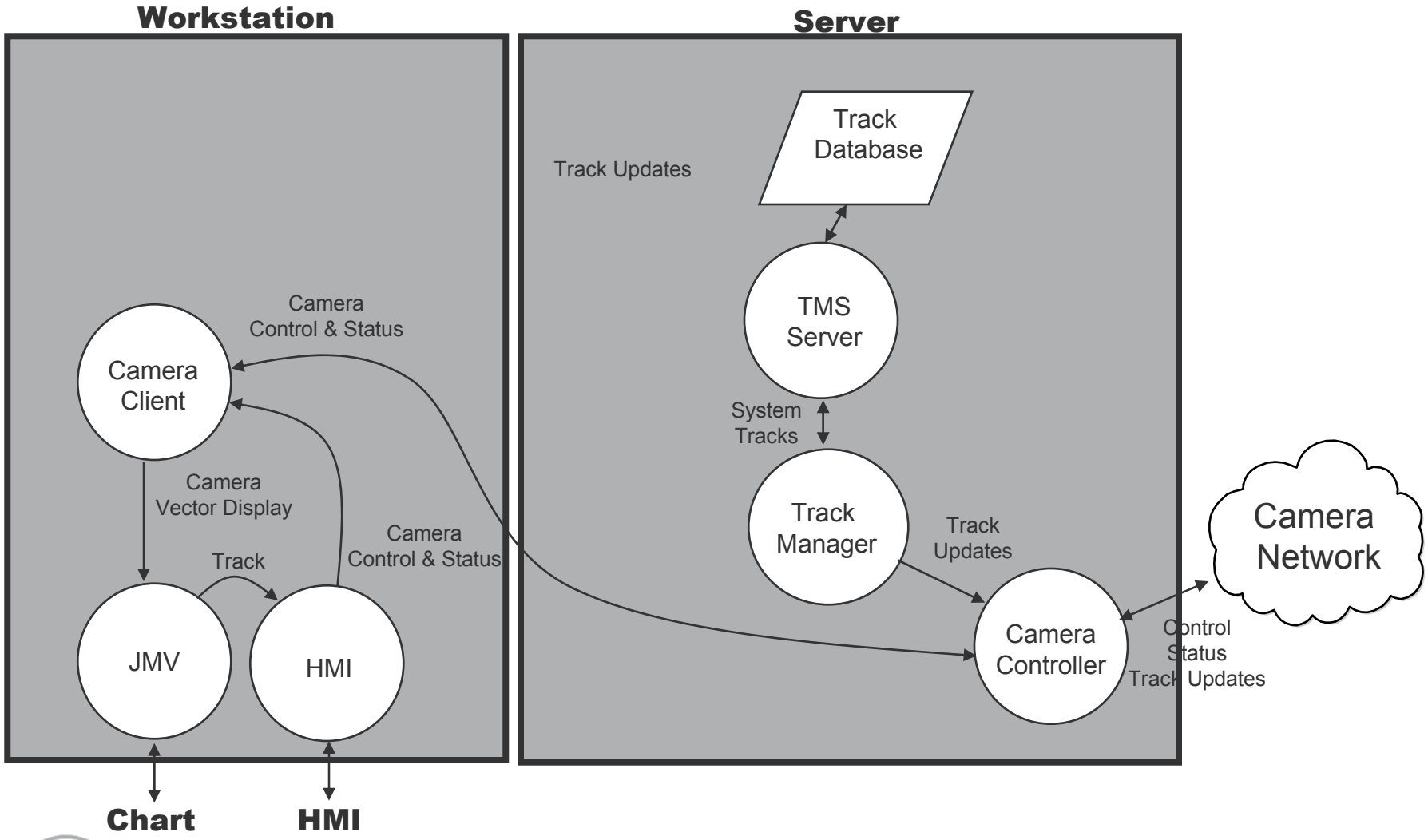
AIS Comms Manager

- Receive-only interface
- Message receipt & processing
  - Position Reports (Msgs 1,2,3)
  - Static/Voyage Data (Msg 5)
  - Binary Addressed Message (Msg 6)
  - Binary Broadcast Message (Msg 8)
  - Addressed Safety-Related Message (Msg 12)
  - Broadcast Safety Related Message (Msg 14)
  - Class B Position Reports (Msgs 18,19)
- Message Distribution
  - Population of AIS System Track in COMRIC
  - Population of other AIS data in COMRIC messages

AIS Surveillance



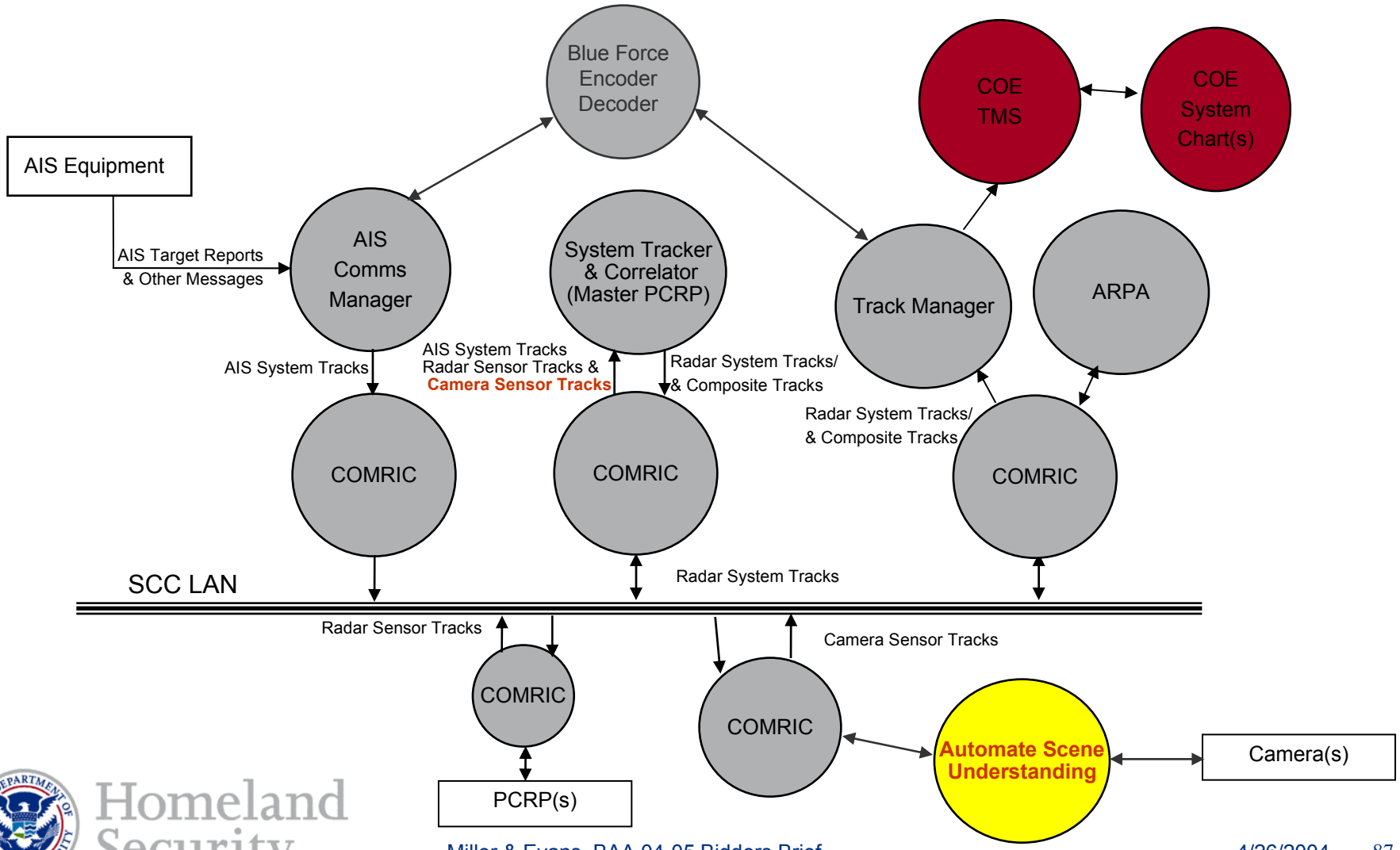
Camera Surveillance



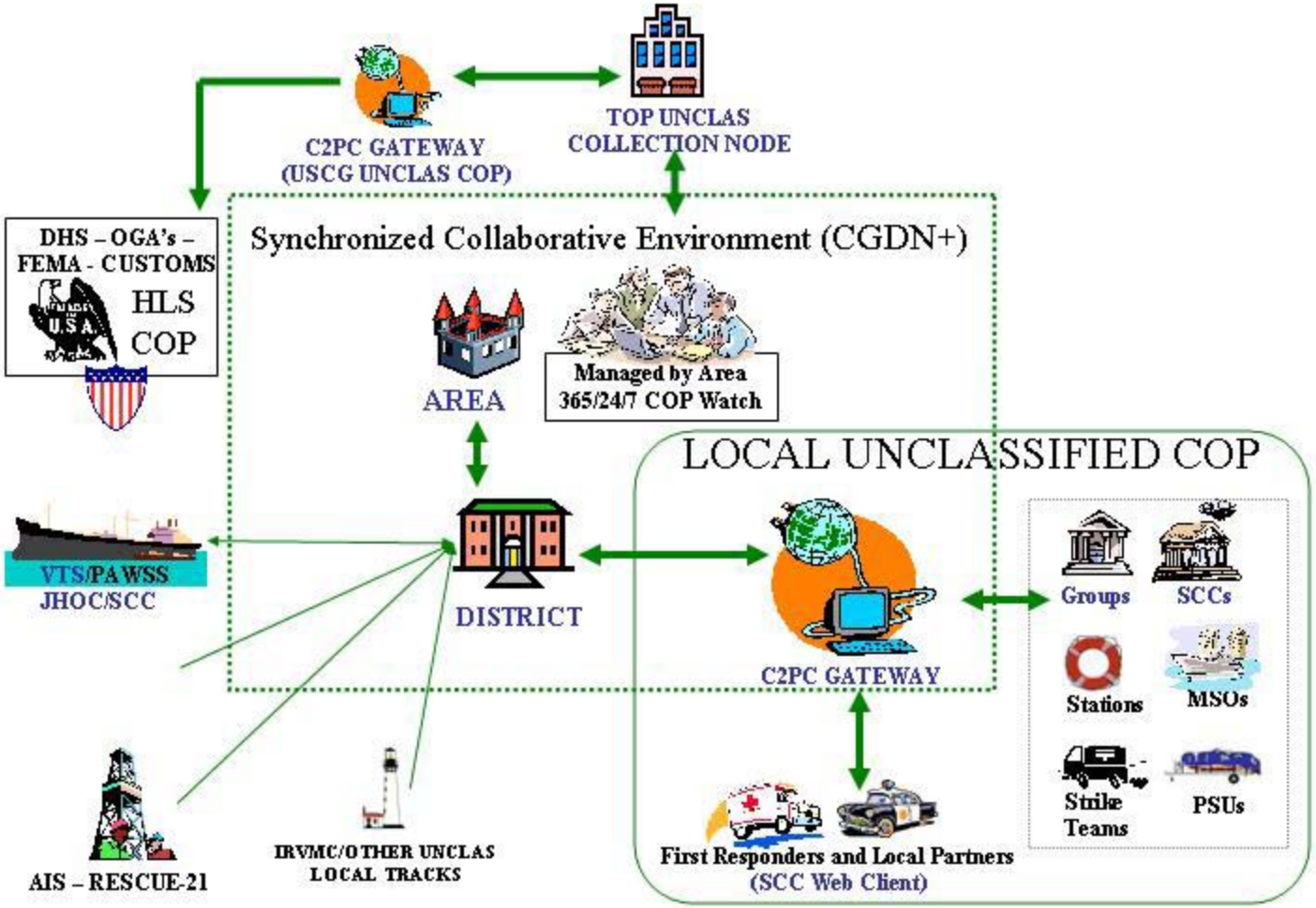
COMRIC Track Report Types

- Position Track Data
  - Radar (range, bearing, latitude/longitude, course, speed)
  - AIS (latitude/longitude, course, speed, ID data)
  - Active Sonar (range, bearing, latitude/longitude, course, speed)
  - IFF (range, bearing, latitude/longitude, ID data)
  - ELINT Cross-Fixes (latitude/longitude, course, speed) - NRL
  - Visual Cross-Fixes (latitude/longitude, course, speed) - NRL
- Bearing Line Data
  - Camera (bearing, passive range data)
  - Passive Sonar (bearing, frequency, passive range data)
  - ELINT Direction Finding (bearing, frequency, passive range data)
  - Visual (bearing, estimated range)

Design and Integration



USCG Unclassified Common Operational Picture



Overview Outline

- Program Overview & Background
- Program Objectives, Desired Outcomes and Approach
- TTA-1&2: Architecture, Component and Algorithm Requirements (Miller)
- TTA-3: Hawkeye Prototype Testbed Description & Requirements (Evans)
- **Proposals Process**
  - Overview
    - Award Mechanisms & Funding Level
    - Procurement Schedule
    - Submitting Questions
  - Proposal Guidance and Selection Criteria
    - TTA-1&2: Architecture and Components (Miller)
    - TTA-3: Hawkeye (Evans)

Period for Submission

- BAA 04-05 will remain open for one year from publication.
- White papers will be required for the three quarterly reviews.
- Most funding will have been awarded by end of the initial period.

Eligible Applicants

- Any entity or team of entities may submit a proposal and/or white paper with the exception of the following DoE Laboratories (DHS strategic partner laboratories):
    1) Lawrence Livermore National Laboratory
    2) Los Alamos National Laboratory
    3) Oak Ridge National Laboratory
    4) Pacific Northwest National Laboratory
    5) Sandia National Laboratory
    6) Brookhaven National Laboratory
    7) Argonne National Laboratory
    8) Idaho National Environmental and Engineering Laboratory
    9) Remote Sensing Laboratory
- Appendix A specifies rules regarding technology transfer from DHS strategic partner laboratories.

Anticipated Funding Level

- HSARPA anticipates that up to $5M in funding will be available in FY'04 for award to multiple teams.
- Approximately $3M will apply to TTA-1 and TTA-2 and $2M to TTA-3.
- Potential for additional funding in subsequent fiscal years.

Types of Awards

- Awards may be executed as:
  - Contracts
  - Cooperative agreements
  - Other transactions (OTAs)
- See Appendix C for information regarding OTAs

Procurement Schedule

DATE	EVENT
12 April 2004	*FedBizOpps announcement published*
26 April 2004	*Briefing to Industry*
3 May 2004	White Paper Registration
17 May 2004	White Papers due @ 4:00 PM EDT (Eastern Daylight Time)
7 June 2004	White Paper Review completed
21 June 2004	Proposal Registration
12 July 2004	Proposals due @ 4:00PM EDT (Eastern Daylight Time)
30 August 2004	Source selection completed. Start contract negotiations.
27 September 2004	Kickoff meetings
22 November 2004	Quarterly Review of Additional White Papers
28 February 2005	Quarterly Review of Additional White Papers
30 May 2005	Quarterly Review of Additional White Papers

Contact Information for Questions

- Email address: *BAA04-05@dhs.gov*
- For correspondence regarding TTA-1&2: *Peter Miller*
- For correspondence regarding TTA 3: *Kirk Evans*
- Written correspondence address:

  Homeland Security Advanced Research Projects Agency

  Department of Homeland Security

  Washington, D.C. 20528

White Papers

- White papers are not required.
- **White papers are strongly encouraged.**
- HSARPA will provide feedback on white papers as a guide for submitting a proposal.
- Neither encouragement or discouragement provided as feedback on a white paper will affect the evaluation of a full proposal.

White Paper Structure

- The white paper should contain the following information in the following order:
  - Quad Chart (see Appendix D)
  - Program Summary

- In PDF (portable document format) format:
  - Readable by IBM-compatible PCs.
  - File size must be no more than 5 MB.
  - Not more than five pages including a one page quad chart.
  - All pictures, figures, tables, and charts in a legible size.

Program Summary – TTA-1&2

- Concise description of the scientific, technical, engineering and management approach.
- For TTA-1, describe the various components of the architecture and proposed and relevant details about how they will function together.
- For TTA-2 (components or algorithms), describe the function of the component or algorithm and its role in a new or existing system.
- For both TTA-1 and TTA-2, point out what is unique about your proposed solution.

Program Summary – TTA-3

- For TTA-3 briefly describe the following:
  - Any existing scene understanding or battlefield awareness system(s) upon which the proposed solution is based, include customer identification
  - The state of development or deployment of the system, include user identification
  - The software architecture to be used, in particular whether it is DII/COE compliant
  - The proposed system's major software segments and hardware
  - The visual understanding techniques to be used
  - The radar scene understanding techniques to be used
  - The fusion techniques to be used
  - The number of targets and sensors successfully handled in real time

Program Summary – All TTAs

- Describe your team and your team's past experience in working with or developing the technologies comprising your system or related technologies.

- A brief summary of the estimated costs and delivery time.

Proposal Guidance – TTA-1 (Vol 1)

- Limited to 35 pages and should cover the following:
  - Overview of the proposed architecture and significance to DHS missions
  - Technical approach with emphasis on uniqueness of approach
  - Diagrams illustrating the components and relationships
  - For each significant component, a functional description and choice of algorithm(s)
  - Managerial approach
  - A description of the members of the team and their relevant experience.
  - Statement of Work
  - Estimate of the costs to produce a full architectural study that meets the deliverables specified in Section 4.3
  - One page cost summary

Proposal Guidance – TTA-2 (Vol 1)

- Limited to 35 pages and should cover the following:
  - Overview of the proposed component or algorithm and significance to DHS missions
  - Technical approach with emphasis on uniqueness of approach
  - Functional and/or algorithm description
  - Managerial approach
  - A description of the members of the team and their relevant experience
  - Statement of Work
  - Estimate of the costs to produce the component or algorithm
  - An estimate of the effort to integrate the component or algorithm into new or existing systems
  - One page cost summary

TTA-3 PROPOSAL OUTLINE

Volume	Section	Description	Max Page Count	Separable
	i	Cover Sheet	1	
	ii	Letter of Transmittal	1	
	1	Executive Summary	1	X
	2	Technical Approach	15	
	3	Task Description Document	4	X
	4	Schedule	2	X
I	5	Management	1	
	6	Key Personnel	1	
	7	Past Experience	3	
	8	Facilities	1	
	9	Government Furnished Resources	1	
	10	Deliverables	2	X
	A	Resumes	5	
		Total Volume I	***38***	
II	I	Cover Sheet	1	
	1	Cost Response	n/a	

Executive Summary

- Any previous or existing system the proposed system is based upon
- The experience of that system in test and evaluation and in the field
- The technology and approach used for visual scene awareness
- The technology and approach used for radar anomaly detection
- The technology and approach used for multi-sensor fusion
- The technology approach used for alerting
- The software architecture to be used

Technical Approach - 1

- Concept of Operations: The overall concept of operations from sensor detection, through classification, sensor fusion, identification, assessment of risk or anomalous behavior, alerting and course of action recommendation.
- Overall architecture: The major segments and hardware and software components, their functions and interfaces.
- Sensor scene understanding: The scene understanding techniques to be used for radar and visual sensor systems and the number and type of sensors that can be accommodated.
- Visual recognition: The types of vessels and attributes the proposed visual recognition system can identify, the effectiveness and experience of the visual recognition systems in the marine environment with waves, whitecaps and vessel motion.
- Alerts: How sensor alerts are generated and the information contained therein.

Technical Approach - 2

- User interface: The proposed user interface and any standards to which it might adhere.
- Open Architecture: Whether and how your proposed system meets the open architecture requirements of Section 2.4.
- Fusion: The techniques used for multi-sensor data fusion. Discuss experience with using this technique with similar systems.
- DII / COE interface: How you will interface your system with the HAWKEYE software system (which is DII/COE complaint).
- Hardware: The hardware proposed, the sizing required for full real-time operations, your calculations, and the assumptions, including the number of radar, visual and AIS targets being tracked and fused simultaneously.

Task Description Document (TDD)

- Describes work tasks required to accomplish the effort.
- Work Breakdown Structure (WBS) format.
- Each task in the TDD shall describe the following:
  - Work to be carried out
  - End result of the task
  - Time allocated
  - Organization performing the task
  - Predecessor tasks
  - Resources (labor, material and services) required
- The resources shall be costed to provide a baseline budgeted cost for the task.
- In the case of software development, the estimated lines of code will be included.
- The TDD shall be at a level sufficient to define the nature of the work to be carried out, measure progress, and understand the relationship of the tasks to one another.

Schedule

- Offeror shall develop an overall program schedule.
- Using resource loaded tasks, the Integrated Master Schedule (IMS) will become the budgeted cost of work scheduled (BCWS) baseline for the program.
- The costs will be broken out by top-level WBS and month.
- The critical path, slack, and schedule reserves will be identified.
- The IMS shall be illustrated in a Gantt Chart format.

Schedule

- Offeror shall describe, in contractor format:
  - Roles and responsibilities of the contractor team
  - Reporting structures and mechanisms
  - Risk assessment and mitigation
  - Cost and progress allocation and reporting
  - Earned value monitoring
  - Baseline change process
  - Progress monitoring
  - Corporate oversight.

Key Personnel

- The accountable corporate officer to whom the project will report, including contact information and title.
- The roles and responsibilities of the key project personnel (not more than 5), including:
  - Project Manager
  - Chief Engineer
  - Specialty Engineering
- If the proposal is bid as a team, the teaming partners should be listed with their roles and rationale for selection.
- Resumes will be included in an appendix.

Past Experience

- Three contracts that the team has performed that are relevant to the proposed effort. Include the following:
  - Contract or effort name
  - Customer and customer contact information
  - Dates of performance
  - What the company performed, what was delivered by the company, technical performance achieved and cost and schedule performance
  - The overall contract value and its present status

Government Furnished Resources

- Any government furnished resources, including information, testing equipment, support equipment, etc., the offeror assumes will be available in order to carry out the planned work.
- Include a complete description, including location, applicable agency, services to be performed, information or facilities to be used.
- List the date on which such resources are required.
- Describe the impact if the resources may not be available or available on time.
- Be complete.

Deliverables

- All deliverables the offeror proposes to provide the government.
- The schedule for delivery and acceptance criteria.

Resumes

- Up to five resumes may be included.
- Must include the project manager and the chief engineer.
- Each resume should be no more than 3 pages long.

Cost Response: All TTAs – 1

- In offeror's format with no restriction on page count.
- Detailed Bases of Estimates and certified cost or pricing data are not required.
- The following data must be provided for each team member and broken out for the base period and any additional periods of performance:
  - Total labor including direct labor and all indirect expenses associated with labor, to be used.
  - Labor hours shall be allocated to each work outline element and segmented by team member.
  - A labor summary by work outline is required. Provide a breakdown of labor and rates for each category of personnel to be used on this project.
  - Total direct material that will be acquired and/or consumed. Limit this information to only major items of material and how the estimated expense was derived. For this agreement, a major item exceeds $25,000.
  - Material costs shall be assigned to specific work outline elements.

Cost Response: All TTAs – 2

- Major efforts to be subcontracted, the source, estimated cost and the basis for this estimate. For this agreement a major effort exceeds $250,000. Subcontract labor and material shall be accounted for as described above.
- A summary chart showing each major subcontractor labor and material effort by work outline is required.
- Total proposed travel expenditures. Limit this information to the number of trips, location, duration, and purpose of each trip.
- Direct costs not included above. List the item, the estimated cost, and basis for the estimate.

- Activities such as demonstrations required to reduce the various technical risks should be identified in the TDD and reflected in the cost proposal.
- The offeror should provide a total estimated price for the major IR&D (independent research and development) activities associated with the program and state whether each program is a dedicated IR&D or if it is being pursued to benefit other programs as well.

White Paper Evaluation Process

- Independent technical review of using the following criteria (in descending order of relative importance):
  - Potential for satisfying the desired requirements including future fieldability in future real-world DHS-relevant testbeds;
  - Sound technical and managerial approach to the proposed work;
  - Capability to perform proposed work and history of performance of the team and team members in developing related technologies and systems.

Proposal Evaluation Process – TTA-1&2

- Independent technical review of each using the following criteria (in descending order of relative importance):
  - Potential for satisfying the desired requirements including future fieldability in future real-world DHS-relevant testbeds.
  - Sound technical and managerial approach to the proposed work, including a demonstrated understanding of the critical technology issues and a strategy to address those issues including risk mitigation strategies.
  - Capability to perform proposed work and history of performance of the team and team members in developing related technologies and systems.
  - Cost realism.
- The final evaluation will be based upon an assessment of the overall best value to the government based upon these criteria.

Proposal Evaluation Process: TTA-3 - 1

- Independent technical review of each using the following criteria:
  - ***Technical***
    - Technical Maturity. Is the offeror's solution based on an existing technically mature, but extensible and upgradeable, system? What is the level and type of risk in the offeror's proposed solutions?
    - Concept of Operations. How well does the offeror's concept of operations match the Coast Guard's Sector Command Center mission and needs?
    - Overall architecture. Does the offeror's overall system architecture provide the capability to be readily integrated with the Hawkeye testbed? Has the offeror used this architecture in the past in successful and relevant systems? Is the proposed system based on an existing working relevant capability?
    - Radar scene understanding. Will the radar scene understanding techniques detect anomalies? Is there a training and learning mechanism? Are there techniques to insert scenario-based or rule-based understanding and assessment? What is the number and variety of the radar sensors supported? What is the offeror's tested experience with radar scene understanding in similar relevant systems? Is the proposed system based on an existing working relevant capability?

Proposal Evaluation Process: TTA-3 - 2

- ***Technical (cont'd)***
  - Visual recognition. What are the proposed types of vessels and attributes the proposed visual recognition system can identify and the offeror's experience? What is the offeror's experience for the visual recognition systems in the marine environment with waves, whitecaps and vessel motion? Is the proposed system based on an existing working relevant capability?
  - Alerts. What is the discrimination and robustness or the alerting mechanism proposed? Can the alerting threshold be either manually or automatically varied according to load, threat condition or other input? What is the format and content of the alerts? Is the proposed system based on an existing working relevant capability?
  - User interface. To what standards does the GUI (graphical user interface) adhere? Does the offeror have a GUI developed which can be integrated into the Hawkeye Testbed?
  - Open Architecture. Does the architecture meet the standards of section 2.4.

Proposal Evaluation Process: TTA-3 - 3

- ***Technical (cont'd)***
  - o Fusion. How well will the multi-sensor fusion capability work? What is the technique and algorithms for achieving multi-sensor fusion? What experience does the offeror have with similar relevant fusion systems? Is the proposed system based on an existing working relevant capability?
  - o DII / COE interface. How will the offeror's system interface with the HAWKEYE software system (which is DII/COE complaint)?
  - o Hardware. Is the proposed hardware COTS? Is the hardware suite proposed sufficient for the size of the problem at hand? How credible are the loading and processing calculations, including CPU sizing, network bandwidths and storage and access? What is the number of radar, visual and AIS targets that can be tracked and fused simultaneously?

Proposal Evaluation Process: TTA-3 - 4

- ***Management***
  - Task Planning and Organization. Does the Task Description Document (TDD) show a logical and complete work package to achieve the goals of the program?Do the tasks have appropriate resources? Are the tasks phased realistically? Are the estimated lines of code realistic and appropriate? Does the TDD give a level of detail and structure sufficient to measure progress and risk? Is the TDD complete, does it cover all the phases of work required to deliver a system?
  - Schedule. Is the schedule based on the TDD? Is it linked in a form to assess schedule risk and progress? Is the schedule realistic? Does it include slack or contingency? Are which give a clear indication of progress clearly visible?
  - Team Composition. Is the team well constructed to provide strength in critical technical areas? Are the responsible and accountable program manager and chief engineer clearly identified? What is the assessment for team communications and integration? What reporting mechanisms are proposed and are they likely to provide early warning of technical, schedule or cost issues?
  - Resumes. What is the relevant experience of the key team members?

Proposal Evaluation Process: TTA-3 - 5

- ***Prior Experience***
  - What is the offeror's prior experience for similar undertakings? Is the proposed system based on a development or product in the offeror's recent experience?
  - Based on inputs from customers of government program offices, what has been the offeror's performance on similar development activities?

Proposal Evaluation Process: TTA-3 - 6

- ***Cost and Cost Realism***
  - The offeror's proposed costs will be adjusted for the cost of providing all proposed Government Furnished Equipment or Information.
  - The offeror's proposed costs will be evaluated based on the level of effort proposed, the completeness of the cost elements, and evaluation of the bases of estimate. The estimated lines of code and cost per line of code will be evaluated. The government will then assign an evaluated cost range for the proposed effort.
  - The cost range may then be extended based on the level of risk evaluated in the technical and management factors.

Review and Selection Process

- Multiple awards are anticipated.
- Awards will be made based on the evaluation, funds availability, and other programmatic considerations.
- The Government reserves the right to fund none, some, parts, or all of the proposals received.
- Portions of resulting awards are likely to be segregated into optional tasks.
- It is the intention upon completion of proposal evaluation to notify bidders of an initiation of negotiation for awards or rejection of their proposal.
- In a limited number of cases, proposals will be put on hold pending the outcome of other negotiations and the availability of funds.
- HSARPA requests that proposals put on hold remain valid for twelve months after the proposal closing date.

Good luck to all Bidders!

The Department of Homeland Security wants you to succeed.

Homeland Security